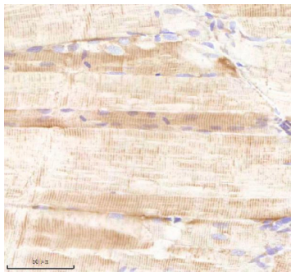
Zebrafish Sars1 Antibody / Serine-tRNA ligase / SerRS (RZ1304)

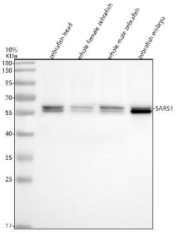
Catalog No.	Formulation	Size
RZ1304	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

Availability	2-3 weeks
Species Reactivity	Zebrafish
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity chromatography
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q6DRC0
Localization	Cytoplasmic, Nuclear
Applications	Western Blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml
Limitations	This Zebrafish Sars1 antibody is available for research use only.



Zebrafish Sars1 Antibody Muscle Tissue IHC. Immunohistochemistry staining of FFPE zebrafish muscle tissue with Sars1 antibody, HRP-labeled secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Zebrafish Sars1 Antibody Tissue WB. Western blot analysis of Sars1 protein using Zebrafish Sars1 antibody and 1) zebrafish head, 2) whole female zebrafish, 3) whole male zebrafish and 4) zebrafish embryo tissue lysate. Predicted molecular weight ~59 kDa.

Description

The Zebrafish Sars1 antibody targets Sars1, also known as Serine-tRNA ligase or SerRS, a cytoplasmic aminoacyl-tRNA synthetase essential for protein translation and cellular homeostasis in Danio rerio. Zebrafish, also known as Danio rerio, express sars1 broadly throughout embryogenesis, with high expression in rapidly proliferating and metabolically active tissues such as the developing brain, somites, heart, liver primordium, and endodermal organs. Sars1 localizes primarily to the cytoplasm, where it catalyzes the ATP-dependent charging of tRNA-Ser with serine, a fundamental step required for accurate mRNA translation and proteome integrity.

Sars1 belongs to the class II aminoacyl-tRNA synthetase family and contains conserved catalytic motifs responsible for amino acid recognition, tRNA binding, and ester bond formation. In zebrafish embryos, elevated sars1 expression coincides with periods of intense protein synthesis needed for cell division, tissue differentiation, and organ formation. A Zebrafish Sars1 antibody is suitable for detecting cytoplasmic expression patterns associated with translational activity and cellular growth during development.

Functionally, Sars1 is indispensable for canonical protein synthesis by ensuring accurate incorporation of serine into nascent polypeptides. Beyond its housekeeping role, vertebrate SerRS proteins have been implicated in additional regulatory functions, including roles in vascular development, stress responses, and signaling modulation independent of tRNA charging. In zebrafish, proper Sars1 activity supports neural development, somitogenesis, cardiovascular formation, and metabolic tissue maturation by maintaining translational fidelity and sufficient protein output. Disruption of sars1 expression can impair global protein synthesis, activate stress pathways, and lead to developmental arrest or tissue-specific defects due to insufficient or inaccurate translation of key regulatory proteins.

Structurally, zebrafish Sars1 contains the conserved aminoacylation domain characteristic of SerRS enzymes, along with regions involved in tRNA recognition and dimerization. These domains ensure precise substrate specificity and catalytic efficiency. The zebrafish sars1 gene maps to chromosome 2 and is regulated by transcriptional programs linked to growth, nutrient availability, and developmental timing. Co-localization studies detect Sars1 throughout the cytoplasm of developing cells, often enriched in regions with high ribosomal density and active translation, overlapping with markers of protein synthesis machinery and metabolic activity.

A Zebrafish Sars1 antibody is suitable for detecting Sars1 in studies focused on protein translation, aminoacyl-tRNA synthetase biology, developmental growth control, metabolic regulation, and stress-response pathways in Danio rerio. Its broad cytoplasmic distribution provides a robust readout of translational capacity across tissues and developmental stages. Researchers use Sars1 expression to examine defects in protein synthesis, analyze links between translation and organogenesis, and investigate how disruptions in aminoacyl-tRNA synthetase function influence developmental and metabolic phenotypes. This antibody is supplied for research use by NSJ Bioreagents.

This Zebrafish antibody is part of a broader Zebrafish / Danio rerio antibody panel offered by NSJ Bioreagents.

Application Notes

Optimal dilution of the Zebrafish Sars1 antibody should be determined by the researcher.

Immunogen

E. coli-derived zebrafish Sars1 recombinant protein (amino acids R133-K483) was used as the immunogen for the Zebrafish Sars1 antibody.

Storage

After reconstitution, the Zebrafish Sars1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Copyright © NSJ Bioreagents. All rights reserved.